

**WHAT IS CLAIMED IS:**

1. A peak detector for detecting a peak value of a burst signal in a burst mode optical receiver, the peak detector comprising:
  - 5 an amplifying terminal configured to reduce an offset of a peak value in a received burst signal using feedback in the peak detector;
  - a transistor that functions as a diode when a positive signal is received from the amplifying terminal;
  - 10 a peak hold capacitor for charging a peak value when the transistor received the positive signal;
  - a signal amplitude detector to monitor the received burst signal amplitude; and
  - 15 a current source to drive a current responsive to the output signal amplitude detector.
2. The peak detector for detecting a peak value of a burst signal in a burst mode optical receiver as claimed in claim 1, wherein the transistor is a Heterojunction Bipolar Transistor (HBT).
3. The peak detector for detecting a peak value of a burst signal in a burst mode optical receiver as claimed in claim 1, wherein the signal amplitude detector further generates a control signal corresponding to the signal amplitude.

4. The peak detector for detecting a peak value of a burst signal in a burst mode optical receiver as claimed in claim 3, wherein the current source is responsive to the control signal.

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5. The peak detector for detecting a peak value of a burst signal in a burst mode optical receiver as claimed in claim 1, wherein when a negative signal is received in the transistor, the peak hold capacitor discharges.

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6. The peak detector for detecting a peak value of a burst signal in a burst mode optical receiver as claimed in claim 1, wherein the signal amplitude detector includes a differential amplifier.

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7. The peak detector for detecting a peak value of a burst signal in a burst mode optical receiver as claimed in claim 1, wherein the current source is a MOS FET.

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8. A bottom detector for detecting a bottom value of a burst signal in a burst mode optical receiver, the bottom detector comprising:

an amplifying terminal configured to reduce an offset of a bottom value in a received burst signal using feedback in the bottom detector;

5 a diode that is turned on when a negative signal is received from the amplifying terminal;

a peak hold capacitor connected to the diode and a voltage source, wherein the peak hold capacitor charges a bottom value when the diode is turned on;

a signal amplitude detector to monitor the received burst signal amplitude; and

10 a current source connected in parallel to the peak hold capacitor to drive a current responsive to an output of the signal amplitude detector.

9. The bottom detector for detecting a bottom value of a burst signal in a burst mode optical receiver as claimed in claim 8, wherein the signal amplitude detector further 15 generates a control signal corresponding to the signal amplitude.

10. The bottom detector for detecting a bottom value of a burst signal in a burst mode optical receiver as claimed in claim 9, wherein the current source is responsive to the control signal.

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11. The bottom detector for detecting a bottom value of a burst signal in a burst mode optical receiver as claimed in claim 8, wherein the signal amplitude detector includes

a differential amplifier.

12. The bottom detector for detecting a bottom value of a burst signal in a burst mode optical receiver as claimed in claim 8, wherein the current source is a MOS FET.